SEA-PHN Network Webinar 2/2023

Whole Grains in Southeast Asia: Health Benefits, Regulations, Dietary Guidelines & Consumption

Whole Grains & Health: Scientific & Regulatory Aspects

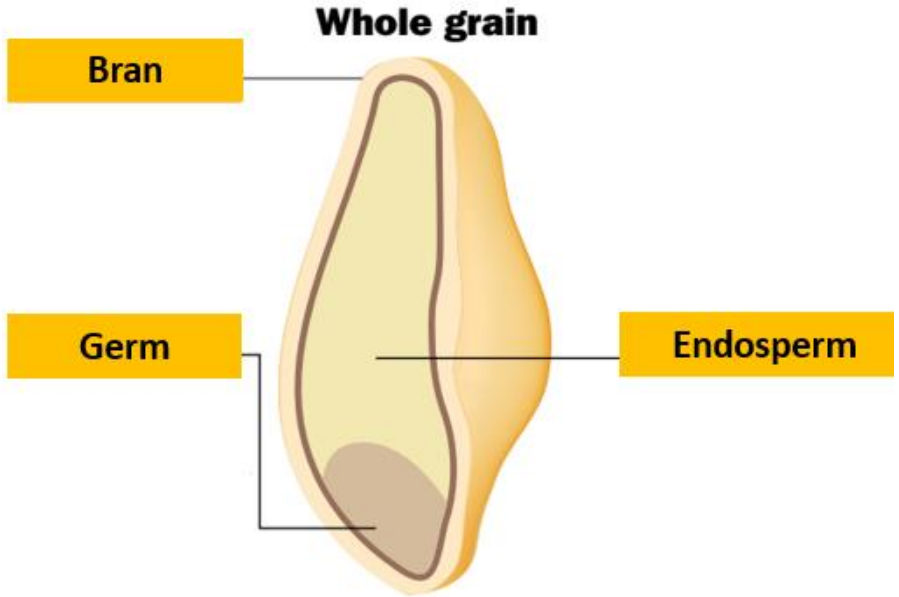
Dr Tee E Siong
SEA-PHN Network, Chairman
Nutrition Society of Malaysia, President

23 November 2023

What is a whole grain?

No global definition of WG and wholegrain foods, eg by Codex Alimentarius.

A generally accepted definition of whole grains, describing the principal components and composition of whole grains:

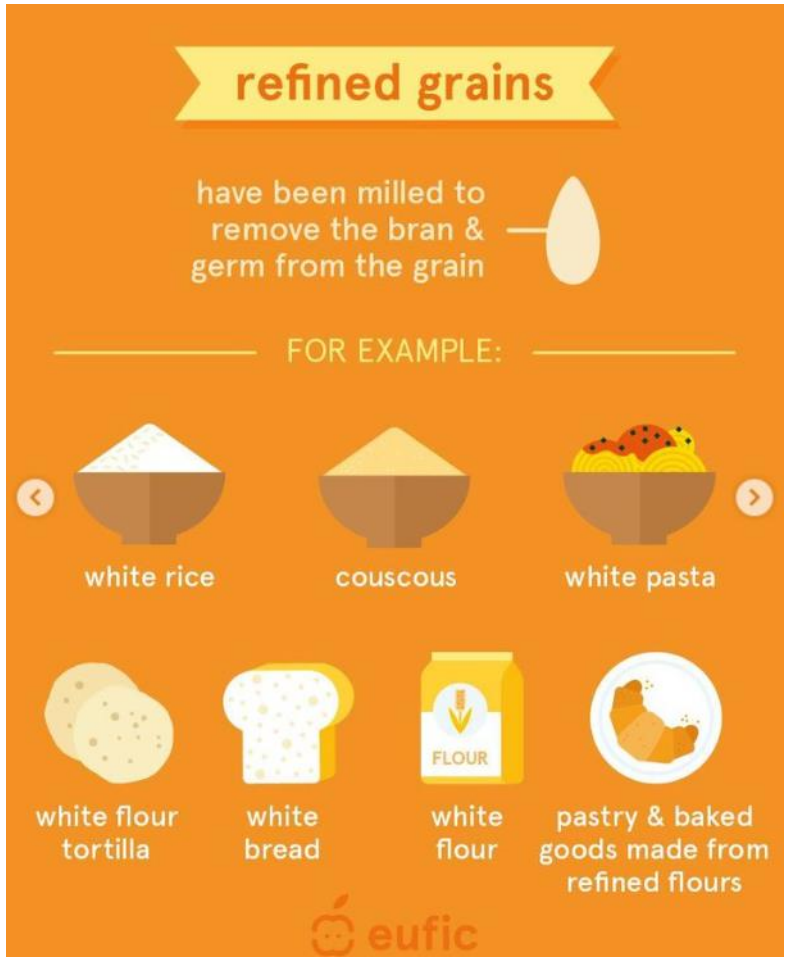


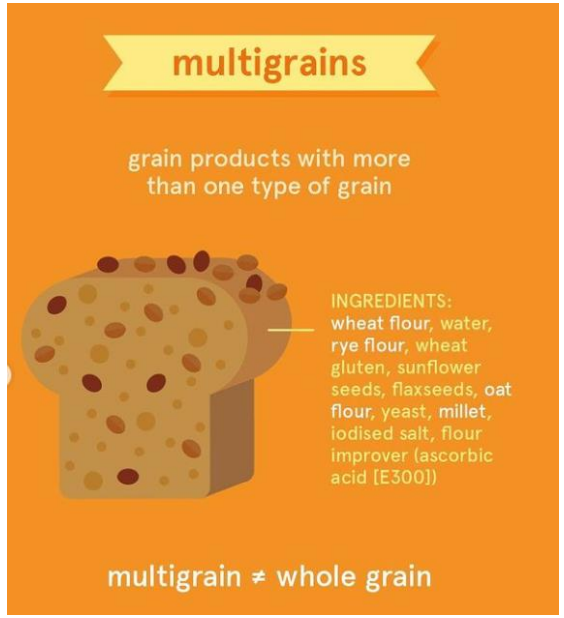
"Whole grains shall consist of the intact, ground, cracked or flaked caryopsis, whose principal anatomical components—the starchy endosperm, germ, and bran—are present in the same relative proportions as they exist in the intact caryopsis."

This definition, with minor variation in wording, has been accepted in other European countries, Australia, China, Mexico, Malaysia, New Zealand, Singapore and Taiwan.

Examples of whole grains

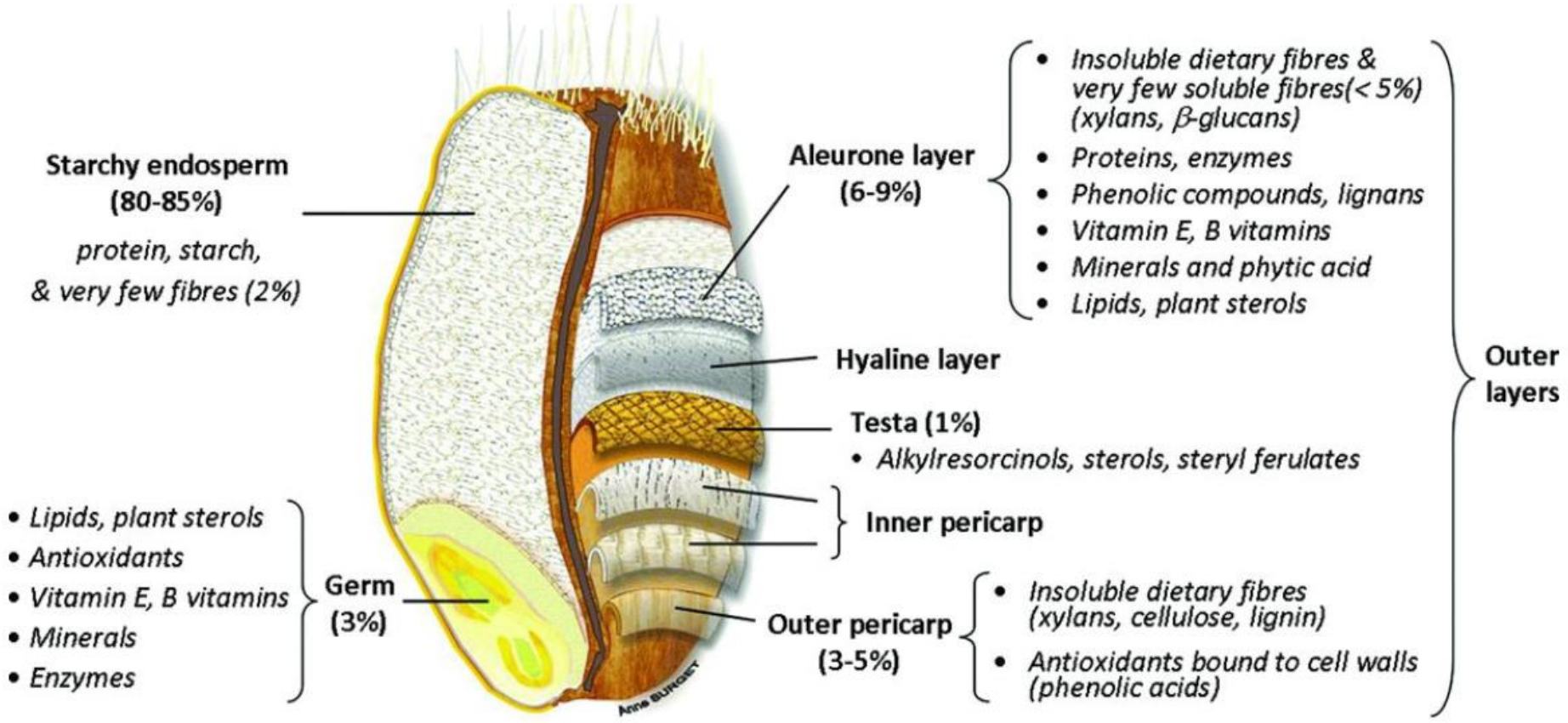
vs.





The specific grains that are considered whole grain may vary among countries

Whole grain kernel is nutrient dense



Source of image: Onipe et al. (2015)

Whole grain consistently associated with health outcomes

RESEARCH

Whole grain consumption and risk of cardiovascular disease, cancer, and all cause and cause specific mortality: systematic review and dose-response meta-analysis of prospective studies

Dagfinn Aune,[1, 2] NaNa Keum,[3] Edward Giovannucci,[3, 4, 5] Lars T Fadnes,[6] Paolo Boffetta,[7] Darren C Greenwood,[8] Serena Tonstad,[9] Lars J Vatten,[1] Elio Riboli,[2] Teresa Norat[2]

- This meta-analysis provides evidence that whole grain intake is associated with:
  - **A reduced risk of coronary heart disease, cardiovascular disease, and total cancer, and mortality from all causes, respiratory diseases, infectious diseases, diabetes, and all non-cardiovascular, non-cancer causes**

BMJ 2016;353:i2716 http://dx.doi.org/10.1136/bmj.i2716

Whole grain consumption and risk of cardiovascular disease, cancer, and all cause and cause specific mortality: systematic review and dose-response meta-analysis of prospective studies

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Table 1 | Intake of total whole grains and effect on coronary heart disease, stroke, cardiovascular disease, total cancer, all cause mortality, and cause specific mortality. Analysis of low versus high intake and dose-response analysis

	High *v* low analysis				Dose-response analysis				
	No of studies	RR* (95% CI)	I^2	P value†	Dose (g/day)	No of studies	RR* (95% CI)	I^2	P value†
Incidence									
Coronary heart disease	5	0.80 (0.74 to 0.87)	0	0.62	90	5	0.84 (0.77 to 0.92)	34	0.20
Stroke	3	0.86 (0.60 to 1.20)	65	0.06	90	3	0.84 (0.59 to 1.20)	74	0.02
Cardiovascular disease	2	0.89 (0.81 to 0.99)	0	0.40	90	2	0.87 (0.78 to 0.97)	0	0.85
Incidence or mortality									
Coronary heart disease	6	0.79 (0.73 to 0.86)	0	0.63	90	7	0.81 (0.75 to 0.87)	9	0.36
Stroke	5	0.87 (0.72 to 1.05)	32	0.21	90	6	0.88 (0.75 to 1.03)	56	0.04
Cardiovascular disease	9	0.84 (0.80 to 0.87)	0	0.48	90	10	0.78 (0.73 to 0.85)	40	0.09
Mortality									
Coronary heart disease	2	0.65 (0.52 to 0.83)	33	0.22	90	3	0.81 (0.74 to 0.89)	10	0.33
Stroke	2	0.85 (0.64 to 1.13)	0	0.99	90	3	0.86 (0.74 to 0.99)	34	0.20
Cardiovascular disease	7	0.81 (0.75 to 0.87)	37	0.15	90	8	0.71 (0.61 to 0.82)	72	0.001
Total cancer	6	0.89 (0.82 to 0.96)	72	0.003	90	6	0.85 (0.80 to 0.91)	37	0.16
All cause	9	0.82 (0.77 to 0.88)	83	<0.001	90	11	0.83 (0.77 to 0.90)	83	<0.001
Respiratory disease	4	0.81 (0.69 to 0.94)	63	0.05	90	4	0.78 (0.70 to 0.87)	0	0.46
Diabetes	4	0.64 (0.42 to 0.98)	64	0.04	90	4	0.49 (0.23 to 1.05)	85	<0.001
Infectious disease	3	0.80 (0.68 to 0.96)	0	0.68	90	3	0.74 (0.56 to 0.96)	0	0.85
Nervous system disease	2	1.13 (0.89 to 1.43)	29	0.24	90	2	1.15 (0.66 to 2.02)	79	0.03
Non-cardiovascular, non-cancer causes	5	0.79 (0.69 to 0.92)	86	<0.001	90	5	0.78 (0.75 to 0.82)	0	0.99

*RR<1 favours those with higher intake
†P for heterogeneity.

Reduction in the relative risk with per 90g/day of whole grain

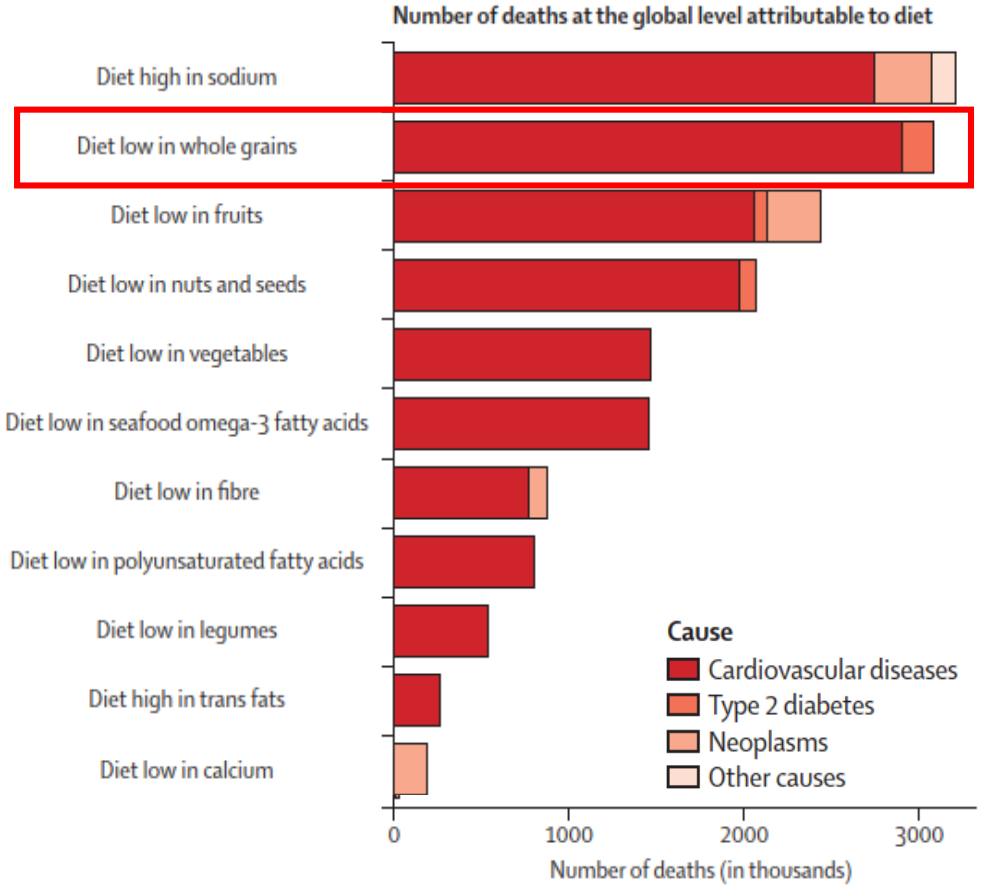
Coronary heart disease – 19%
Cardiovascular disease – 22%
All cause mortality – 17%
Mortality from stroke – 14%
Mortality from diabetes – 51%
Mortality from cancer – 15%

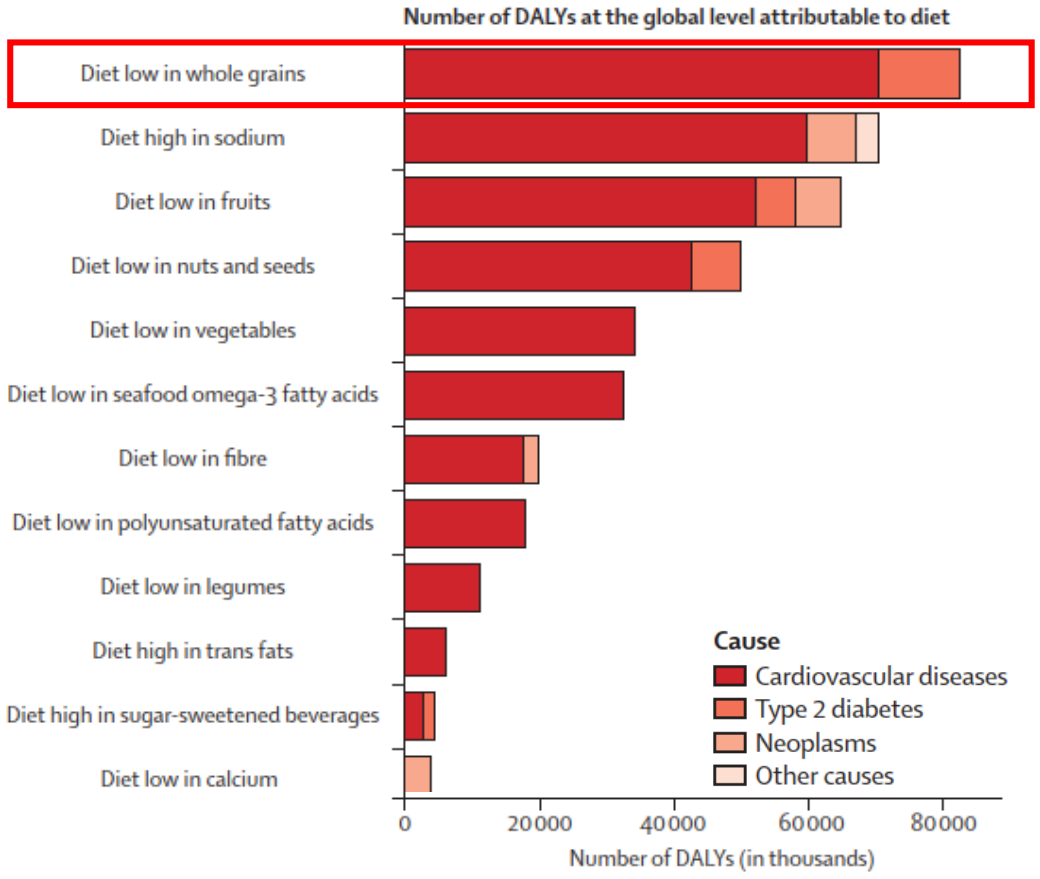
Aune et al, 2016. BMJ 2016;353:i2716 http://dx.doi.org/10.1136/bmj.i2716

Health effects of dietary risks in 195 countries, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017

GBD 2017 Diet Collaborators (Ashkan Afshin et al 2019)*

In 2017, 11 million deaths and 255 million disability-adjusted life-years (DALYs) were attributable to dietary risk factors. High intake of sodium, low intake of whole grains, and low intake of fruits were the leading dietary risk factors for deaths and DALYs globally and in many countries. Need for improving diet across nations





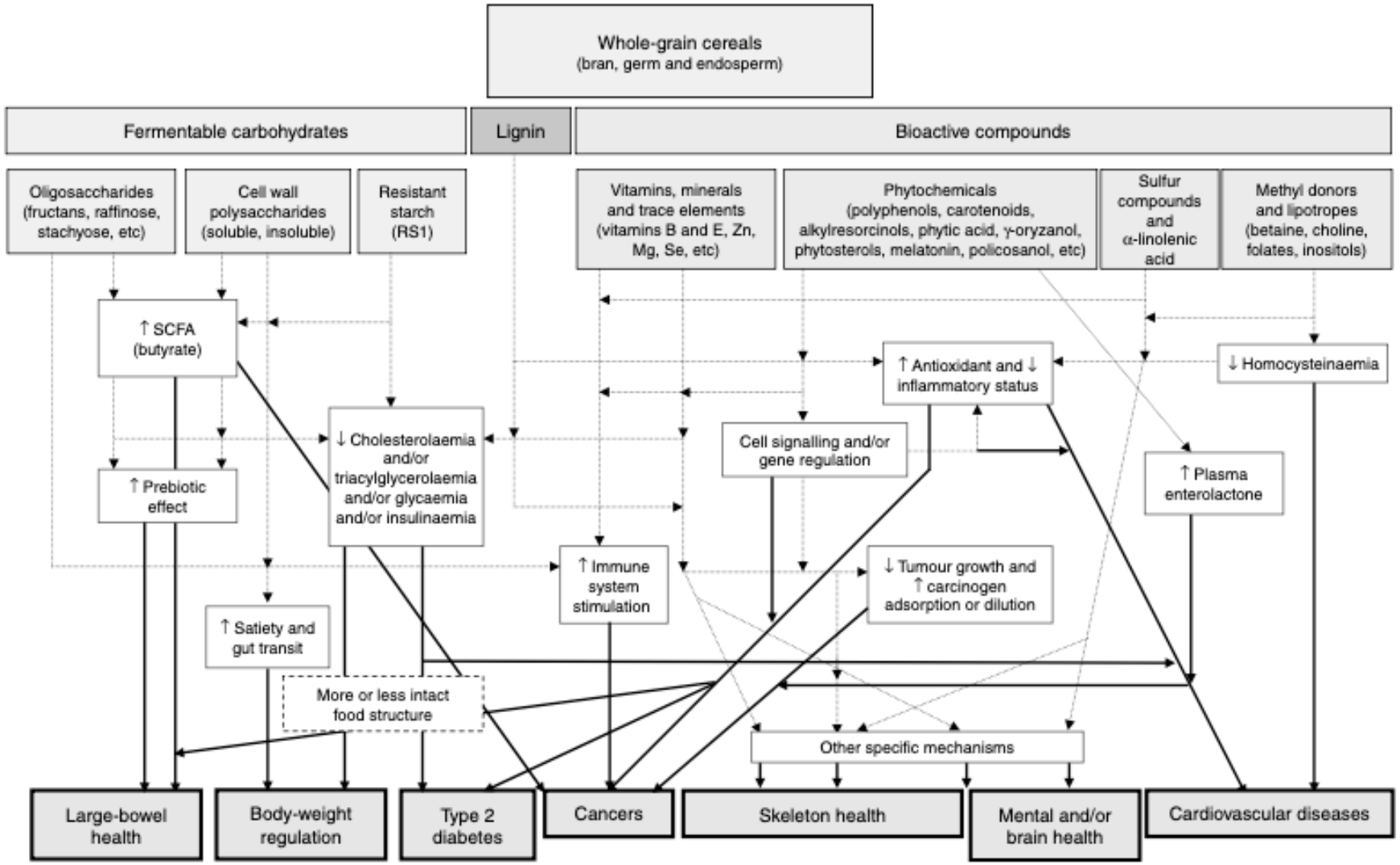
Lancet 2019; 393: 1958–72; http://dx.doi.org/10.1016/ S0140-6736(19)30041-8

New hypotheses for the health-protective mechanisms of whole-grain cereals: what is beyond fibre?

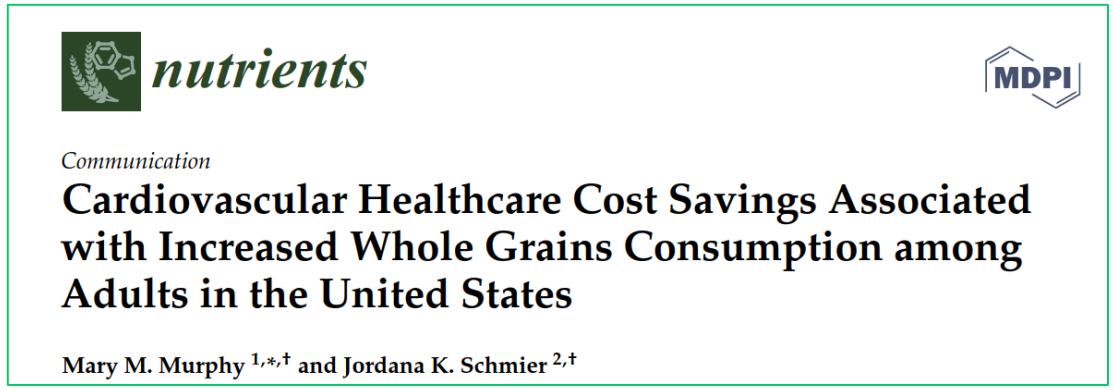
Anthony Fardet[1,2]

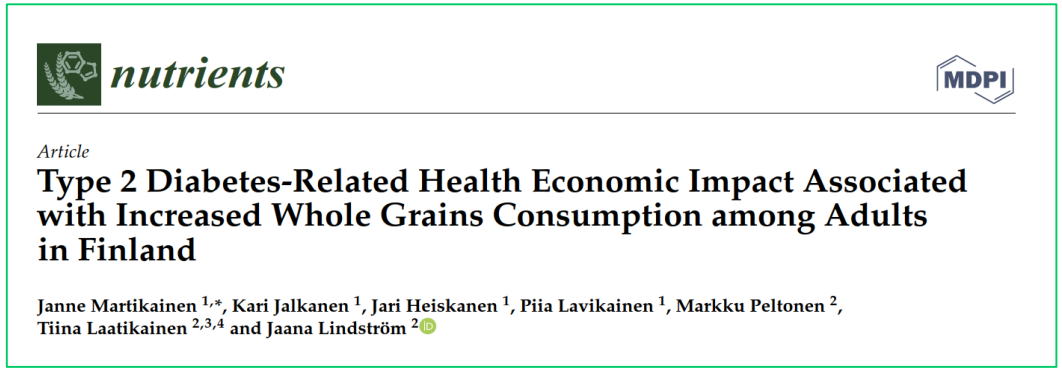
[1]*INRA, UMR 1019 Nutrition Humaine, F-63122 Saint-Genès-Champanelle, France*
[2]*Clermont Université, UFR Médecine, UMR 1019 Nutrition Humaine, F-63000 Clermont-Ferrand, France*

Nutrition Research Reviews (2010), 23, 65–134
doi:10.1017/S0954422410000041



Increased whole grains consumption associated with healthcare cost savings





Several studies have shown that increasing whole grains consumption could lead to important health gains and has the potential for substantial healthcare cost savings, suggesting the opportunity to communicate the need for dietary change, to swap refined grains for whole grains

Recommendations to increase whole grain consumption are part of dietary guidelines around the world

Indonesia	Eat a variety of staple foods, highlighting that whole grain such as corn, brown rice, black rice are high in fibre
Malaysia	Eat adequate amounts of rice, other cereals, whole grain cereal-based products and tubers
Philippines	The "Pinggang Pinoy" emphasizes that whole grains are the preferred food group amongst energy-providing food items.
Singapore	Eat sufficient amounts of grain, especially wholegrains
Australia	Between 6-12 servings of grain-based foods per day including plenty of whole grain varieties
China	A total daily intake of 200-300g of cereals, of which whole grains and legumes should make up 50-150g
Canada	Make at least half of your grain products whole grain each day
Denmark	≥75 g/d, Choose WG first
France	At least one whole grain starch per day
India	Use a combination of whole grain, grams (pulses) and greens
Norway	70–90 g/d, Eat WG cereal products every day.
Sweden	70 g/d in females—90g/d in males
UK	Choose whole grain versions/varities
USA	Consume at least half of all grains as whole grains

WHO Guidelines on carbohydrate intake for adults & children: "Carbohydrate intake should come primarily from whole grains, vegetables, fruits and pulses"

- Despite the recommendations of whole grains intake in many dietary guidelines, data on whole grain intake has not been reported in national food consumption surveys in most countries
- Among the few that reporting, the data suggests a wide gap between recommendations and actual intake

Varied approaches towards dietary recommendations of WGs

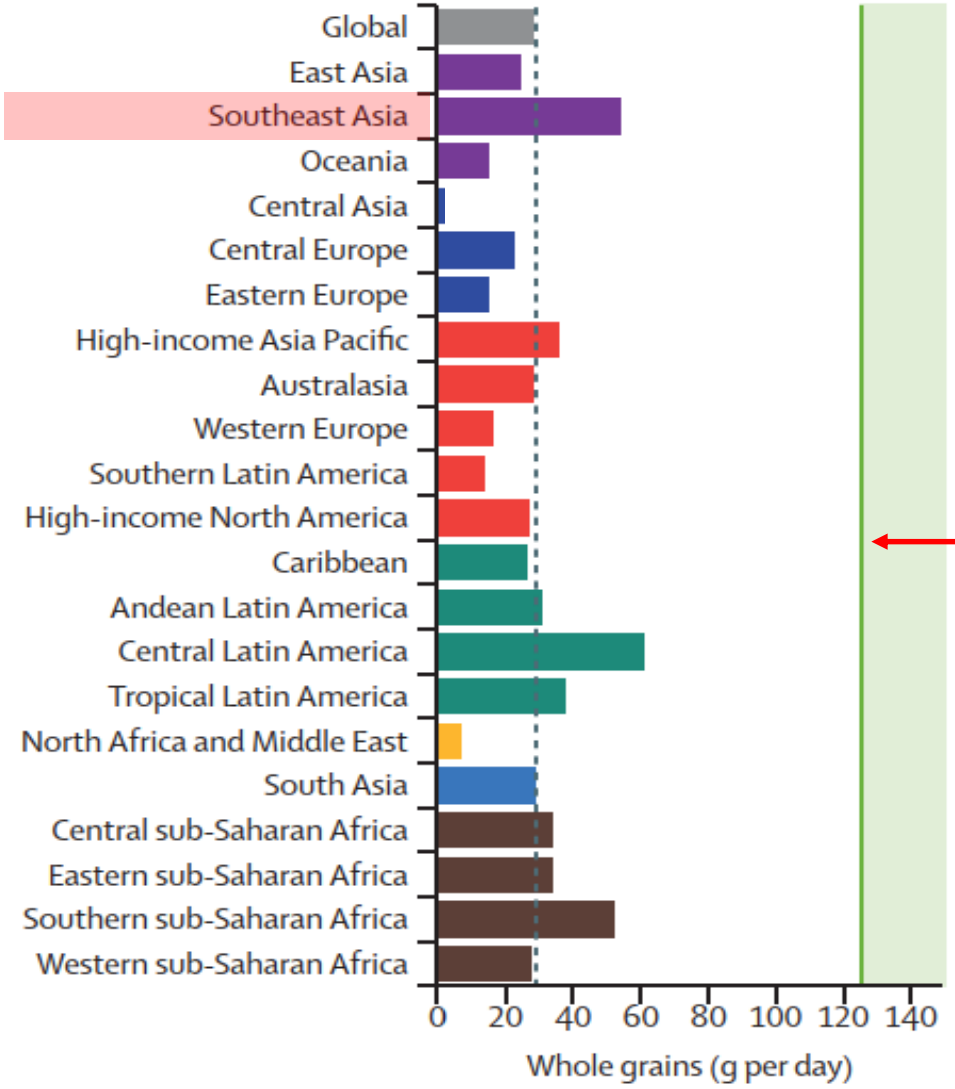
Whole grain-related recommendations from professional bodies in the ASEAN member states

	Questions			
Country	Are There Country-Specific, Food-Based Whole Grain Recommendations From Professional Groups or Non-Governmental Organisations (e.g., Nutrition Society/Whole Grains Council etc.)?	Are There Suggestions for Wholegrain Food Portion Size or Amounts of Whole Grains In The Above Mentioned Guideline?	Do The Above Recommendations Suggest (Scientific or Other) Rationale for Increasing Whole Grain Intake?	Are the Above Professional Bodies or Non-Governmental Organisations Using Specific Tools, Educational Materials or Other Approaches to Increase Whole Grain Intake?
Brunei				
Cambodia				
Indonesia	N	N	N	N
LPDR				
Malaysia	Y [53,59]	Y [53,60]	Y [53,59]	Y [60–63]
Myanmar				
The Philippines	N	N	N	N
Singapore	Y [64]	N	Y [64]	N
Thailand	N	N	N	N
Vietnam	N	N	N	N

- Professional bodies tended to be less frequently involved in making suggestions for whole grain intake
- The only countries were Malaysia and Singapore, where recommendations (from the Nutrition Society of Malaysia and Singapore Nutrition and Dietetic Association respectively) had been drafted in partnership with or with clear reference to the national public health agencies.

Source: Brownlee et al (2018). An Overview of Whole Grain Regulations, Recommendations and Research across Southeast Asia. *Nutrients* 10, 752; doi:10.3390/nu10060752

The world faces under consumption of whole grains



- Despite the recommendations of whole grains intake in many dietary guidelines, data on whole grain intake has not been reported in national food consumption surveys in most countries
- Among the few that reporting, the data suggests a wide gap between recommendations and actual intake

Optimal level of intake (optimal range of intake):
125 g (100–150) per day

Optimal level of intake (according to the midpoint of the optimal range of intake), defined as the level of risk exposure that minimises the risk from all causes of death.

Source:
GBD 2017 Diet Collaborators (2019). Health effects of dietary risks in 195 countries, 1990–2017: A systematic analysis for the Global Burden of Disease Study 2017. *Lancet* 393: 1958–72;

Main barriers to and facilitators of whole grain consumption in children & adults

Main Factors Influencing Whole Grain Consumption in Children and Adults—A Narrative Review

Alexandra Meynier [1,*], Aurélie Chanson-Rollé [2] and Elisabeth Riou [1]

1 Mondelez France R&D SAS, 91400 Saclay, France; elisabeth.riou@mdlz.com
2 VAB-Nutrition, 63100 Clermont-Ferrand, France; aurelie.chanson-rolle@vab-nutrition.com

	Kids		Adults		
	Children	Adolescents	Young	Middle-aged	Older
Barriers +	Dislike taste / texture	Poor availability of FCWG	Dislike taste / texture	Cost of FCWG	Cost of FCWG
	Poor availability of FCWG	Dislike taste / texture	Cost of FCWG	Dislike taste / texture	Difficult to identify FCWG
	Lack of appeal (appearance / pack / marketing)	Time-consuming to prepare/eat	Difficult to identify FCWG	Difficult to identify FCWG	Dislike taste / texture
	Difficult to identify FCWG	Lack of appeal (appearance / pack / marketing)	Poor availability of FCWG	Lack of knowledge on nutrition & health benefits	Poor availability of FCWG
Barriers -	Lack of knowledge on nutrition & health benefits	Cost of FCWG	Lack of knowledge on nutrition & health benefits	Dietary habits & other family members (children)	Chewing difficulties (institutions)
Facilitators +	↗ sensory appeal	↗ availability of FCWG	↗ sensory appeal	↗ sensory appeal	↗ ability to identify FCWG
	Incorporate WG in usual and well-liked products	Preference / liking of taste/texture	↗ availability of FCWG	↗ availability of FCWG	↗ sensory appeal
	Familiarization to FCWG	↗ sensory appeal	Familiarization to FCWG	Familiarization to FCWG	↗ availability of FCWG
	Preference / liking of taste/texture	Incorporate WG in usual and well-liked products	Preference / liking of taste/texture	Clear labeling of WG on packs	Preference / liking of taste/texture
Facilitators -	↗ availability of FCWG	↗ variety of FCWG / ↗ ability to identify FCWG	↗ ability to identify FCWG / Education vs FCWG cooking / preparation	Education vs FCWG cooking / preparation	Education vs FCWG cooking / preparation

Barriers

- Dislike taste/texture
- Difficult to identify WG foods
- Poor availability
- Costly
- Lack of knowledge
- Lack of appeal

Facilitators

- Increase availability & variety
- Include WG in popular foods
- Improve sensory appeal
- Reduce costs
- Clear labelling of WG foods
- Consumer education

Nutrients **2020**, *12*, 2217; doi:10.3390/nu12082217

Main barriers to and facilitators of whole grain consumption: Findings from Malaysia

Perceived barriers towards whole grain consumption among the Malaysian adult population: findings from a theory-based qualitative study

Danaselvam Ugunesh, Ching Sin Siau, Mohd Nor Ahmar Bin Mohd Sanip, Hui Chin Koo

British food journal, 09 Feb 2023, Vol. 125, Issue 3, pages 1130 - 1147

- Most commonly mentioned facilitators:
  - Whole-grain cookbook development
  - Cost reduction
  - Whole grains education
  - Awareness of whole grains
  - Enhanced accessibility and availability of whole grains
- Least mentioned facilitators:
  - Improving product labelling
  - Creating a habit/lifestyle that encourages the consumption of whole grains in daily life
  - Peer encouragement

Facilitators to improve whole-grain consumption among Malaysian adults: a qualitative study

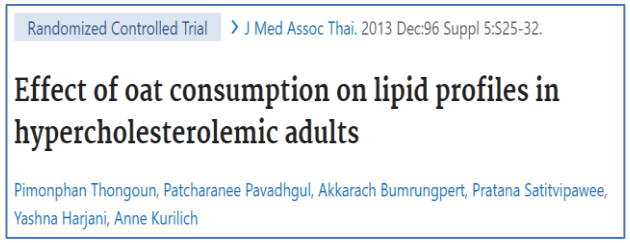
Ugunesh Danaselvam, Ching Sin Siau, Mohd Nor Ahmar Bin Mohd Sanip, Hui Chin Koo

British food journal, 29 Aug 2023, Vol. 125, Issue 9, pages 3199 - 3214

- Predominant barriers
  - Perceived cost
  - Dislikes towards the sensory aspects
  - Inadequate knowledge in identifying whole grains
  - Poor awareness
  - Lack of knowledge in whole grain foods preparation
  - Wide variety of other tasty cuisine alternatives
  - Low availability & accessibility
  - Cultural eating behaviours
  - Family influence

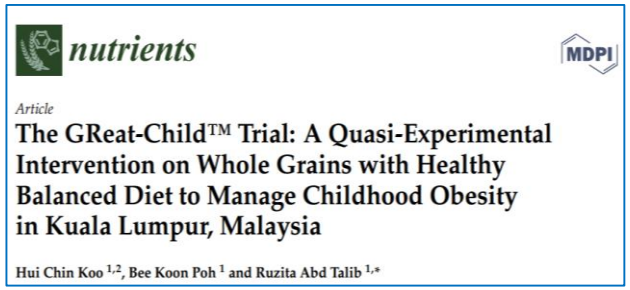
Whole grain consumption research in the region

- A number of observational studies/intervention had collected valuable data on wholegrain intake but the target population (e.g., patient groups or other sub-groups) may not be entirely representative of the country's population.
- Limited evidence from observational studies and randomised controlled trials in Southeast Asia.
  - Longer-term randomised-controlled trials in SEA assessed the impact of switching from refined grains to whole grain alternatives (white rice versus oats and white rice versus pre-germinated brown rice respectively)
- Data on consumption of wholegrain foods is lacking across population groups in Southeast Asia, in view of the challenges in such studies, eg consumer identification of whole grains, lack of labelling information


Randomized Controlled Trial · J Med Assoc Thai. 2013 Dec:96 Suppl 5:S25-32.

Effect of oat consumption on lipid profiles in hypercholesterolemic adults

Pimonphan Thongoun, Patcharanee Pavadhgul, Akkarach Bumrungpert, Pratana Satitvipawee, Yashna Harjani, Anne Kurilich

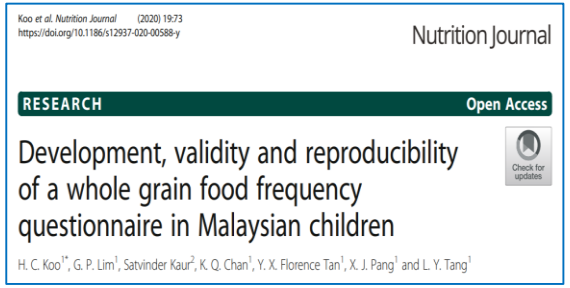

nutrients

MDPI

Article

The GReat-Child™ Trial: A Quasi-Experimental Intervention on Whole Grains with Healthy Balanced Diet to Manage Childhood Obesity in Kuala Lumpur, Malysia

Hui Chin Koo [1,2], Bee Koon Poh [1] and Ruzita Abd Talib [1,*]

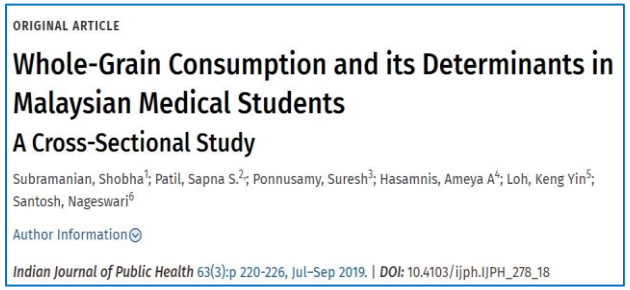

Koo et al. Nutrition Journal (2020) 19:73
https://doi.org/10.1186/s12937-020-00588-y

Nutrition Journal

RESEARCH Open Access

Development, validity and reproducibility of a whole grain food frequency questionnaire in Malaysian children

H. C. Koo[1*], G. P. Lim[1], Satvinder Kaur[2], K. Q. Chan[1], Y. X. Florence Tan[1], X. J. Pang[1] and L. Y. Tang[1]


ORIGINAL ARTICLE

Whole-Grain Consumption and its Determinants in Malaysian Medical Students

A Cross-Sectional Study

Subramanian, Shobha[1]; Patil, Sapna S.[2]; Ponnusamy, Suresh[3]; Hasamnis, Ameya A[4]; Loh, Keng Yin[5]; Santosh, Nageswari[6]

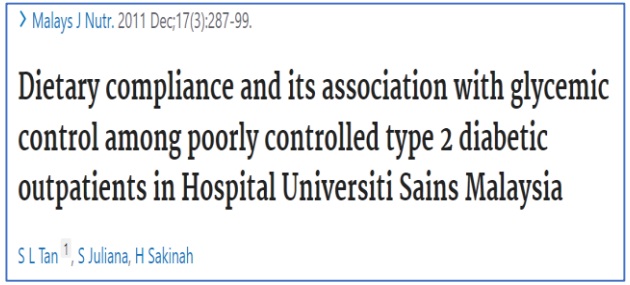
Author Information

Indian Journal of Public Health 63(3):p 220-226, Jul–Sep 2019. | DOI: 10.4103/ijph.IJPH_278_18


J Nutr Sci Vitaminol, 60, 183–187, 2014

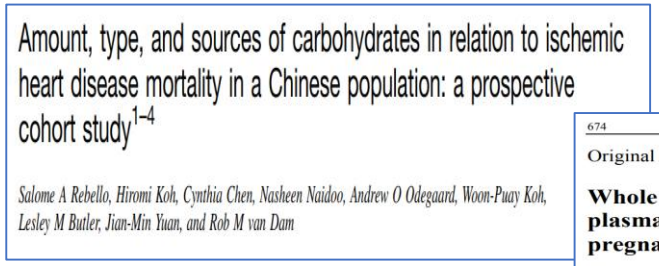
Pre-Germinated Brown Rice Reduced Both Blood Glucose Concentration and Body Weight in Vietnamese Women with Impaired Glucose Tolerance

Thi Nhung Bui[1], Thi Hop Le[1], Do Huy Nguyen[1], Quang Binh Tran[2], Thi Lam Nguyen[1], Danh Tuyen Le[1], Do Van Anh Nguyen[1], Anh Linh Vu[3], Hiromichi Aoto[4], Yasuhide Okuhara[4], Yukihiko Ito[4], Shigeru Yamamoto[5] and Mitsuo Kise[4,5,*]

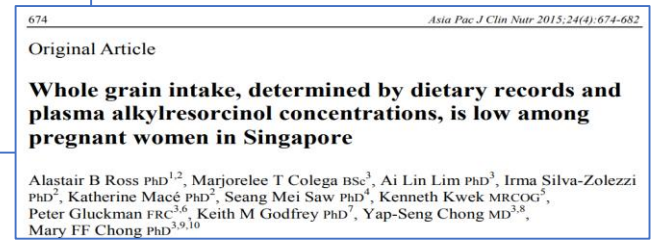

Malays J Nutr. 2011 Dec;17(3):287-99.

Dietary compliance and its association with glycemic control among poorly controlled type 2 diabetic outpatients in Hospital Universiti Sains Malaysia

S L Tan [1], S Juliana, H Sakinah


Amount, type, and sources of carbohydrates in relation to ischemic heart disease mortality in a Chinese population: a prospective cohort study[1–4]

Salome A Rebello, Hiromi Koh, Cynthia Chen, Nasheen Naidoo, Andrew O Odegaard, Woon-Puay Koh, Lesley M Butler, Jian-Min Yuan, and Rob M van Dam


674 Asia Pac J Clin Nutr 2015;24(4):674-682

Original Article

Whole grain intake, determined by dietary records and plasma alkylresorcinol concentrations, is low among pregnant women in Singapore

Alastair B Ross PhD[1,2], Marjorelee T Colega BSc[3], Ai Lin Lim PhD[3], Irma Silva-Zolezzi PhD[2], Katherine Macé PhD[2], Seang Mei Saw PhD[4], Kenneth Kwek MRCOG[5], Peter Gluckman FRC[3,6], Keith M Godfrey PhD[7], Yap-Seng Chong MD[3,8], Mary FF Chong PhD[3,9,10]

Regulatory frameworks governing wholegrain foods definitions or whole grain-related claims in ASEAN country

Overview of whole-grain-related regulations and health claims specific to each ASEAN country (1)

There are very few regulations in the ASEAN region that relate to definitions of whole grains and wholegrain foods

	Questions				
Country	Are There Existing Regulations Related to the Definition of Whole Grains and Wholegrain Foods?	Do the Regulations Include Requirements for Minimum Amounts of Whole Grains in Various Foods?	Are There Labelling Requirements or Options for Whole Grains and Wholegrain Foods?	Do the Regulations Allow Content Claims Related to Whole Grains?	Do the Regulations Allow Any Health Claims Related to Whole Grains?
Brunei					
Cambodia					
Indonesia	Y [68]	Y [68]	Y [69]	Y [69]	N [70]
LPDR					
Malaysia	Y [a]	Y	Y [a]	N	N
Myanmar					
The Philippines	N	N	N	N	N
Singapore	Y [65]	N	Y [71]	Y [b] [66]	Y [b] [66]
Thailand	N	N	N	N	Y [c]
Vietnam	N	N	N	Y [c]	Y [c]

Source: Brownlee et al (2018). An Overview of Whole Grain Regulations, Recommendations and Research across Southeast Asia. *Nutrients* 10, 752; doi:10.3390/nu10060752

Overview of whole-grain-related regulations and health claims specific to each ASEAN country (2)

Indonesia	Malaysia	Singapore

• Requirement to include the percentage of whole grains in a product labelled "Whole Grain", although the types of grain did not have to be stated.
 	
• Foods that are "whole, broken, or flaked grain, including rice" and "breakfast cereals, including rolled oats" are the product types that can bear claims to being wholegrain foods, with the latter requiring a minimum content of 25% whole grains.
	• No label describing any food shall include the word "wholegrain" or "wholemeal" unless the food contains:
	  • 100% of wholegrain or wholemeal for wheat flour, rice flour, rice or grains;
	  • 60% or more of wholegrain or wholemeal for bread; and
	  • 25% or 8g or more of wholegrain or wholemeal per serving for other products.
	• When the above criteria are fulfilled, the word "wholegrain" or "wholemeal" and the percentage shall be written in the label in not less than 4-point lettering.
	• "Wholegrain" or "wholemeal" in these context refer to cereal grains that consist of intact, ground, milled, cracked or flaked kernel after the removal of the inedible parts.
		• Requirement to include the percentage of whole grains in a product labelled "Whole Grain", although the types of grain did not have to be stated.
		
		• Products containing whole grains that meet specific requirement for nutrient profiles (i.e., that meet requirements for low-fat/high fibre content claims) can make broad claims e.g. *healthy diets rich in whole grains, fruits and vegetables reducing the risk of major non-communicable diseases*, there is no stated minimum percentage of whole grains that should be included.
		
		• Products must state the percentage of whole grains that they contain on the pack

Source: Brownlee et al (2018). An Overview of Whole Grain Regulations, Recommendations and Research across Southeast Asia. *Nutrients* 10, 752; doi:10.3390/nu10060752;
Malaysia Regulation 18(10) Wholegrain and wholemeal

Legal definition and requirements of whole grain- Food Regulations Malaysia 1985

Amendment No 4, 2020 P.U. (A) 209:
Regulation 18 (10, 11, 12):

“wholegrain” or “wholemeal” cereal grains shall consist of intact, ground, milled, cracked or flaked kernel after the removal of the inedible parts.

Foods labelled as “wholegrain” or “wholemeal” shall contain -

a) 100% of wholegrain or wholemeal for wheat flour, rice flour, rice or grains;
b) 60% or more of wholegrain or wholemeal for bread; and
c) 25% or 8 g or more of wholegrain or wholemeal per serving for other products.

Wholegrain or wholemeal foods shall be labelled with the % of the whole grain or whole meal in not less than 4 point lettering.

21 Julai 2020
21 July 2020
P.U. (A) 209

WARTA KERAJAAN PERSEKUTUAN

FEDERAL GOVERNMENT GAZETTE

PERATURAN-PERATURAN MAKANAN (PINDAAN) (NO. 4) 2020

FOOD (AMENDMENT) (NO. 4) REGULATIONS 2020

While there is general consensus for defining a whole grain, significant variation exists in defining a wholegrain food

Region/Country	Whole grain qualifying criteria (% range)
Indonesia	• ≥ 25% whole grain ingredients for whole grain claim for whole, broken, or flaked grain, including rice, breakfast cereals, rolled oats
Malaysia	• 100% of ingredients must be whole grain for whole grain wheat flour, rice flour, rice, and grains • 60% must be whole grain ingredients for whole grain bread • 25% must be whole grain ingredients or 8g whole grain/serving for other products
Taiwan	• ≥ 51% whole grain ingredients based on total product dry weight for whole grain food claim and single-grain product • 100% whole grain ingredients for whole grain powder, with no other material or additive
USA	• ≥ 8g to ≥ 16g whole grain/serving for different category of Whole Grain Council Whole Grain Stamp • ≥ 8g dry WG ingredient per labelled serving for meat/poultry products containing whole grains or ≥ 51% of the dry grain components must be WG (USDA) • ≥ 51% whole grain by weight per reference amount customarily consumed (FDA)
Canada	• ≥ 8g to ≥ 16g whole grain/serving for different category of Whole Grain Council Whole Grain Stamp
Europe	• Range from ≥ 25% to 100% for different types of bread • Range from ≥ 50% to 100% for whole grain pasta • ≥ 50% for whole grain biscuits (Netherlands) • ≥ 51% of ingredients must be whole grain ingredients by weight (UK) • ≥ 30% of ingredients must be whole grain based on total-product dry weight (European Union) • 15%-39% whole grain ingredient/total weight for 'source of whole grain' claim; >39% for 'rich in whole grain' claim (France) • 100% of flours, grains flakes must be whole grain (Norway) • ≥ 50% of ingredients must be whole grain based on product weight (Denmark whole grain health claim)
Australia	• ≥ 8g/16g/24g whole grain per manufacturer serving for 'contain whole grain'/'high in'/'very high in' whole grain claim

Source: Mathews & Chu (2020). Global review of whole grain definitions and health claims. *Nutrition Reviews* 78(S1):98–106

Whole Grains in nutrient profiling & front-of-pack (FOP) labeling

- FOP labelling systems are meant to help guide consumers toward products that contribute to an overall diet more closely aligned with dietary recommendations, i.e. identify healthier products
- Some systems, eg healthier choice logo, are based on nutrient profile systems with specific criteria
- Usually the criteria require products to limit amounts of “nutrients to reduce/avoid”, ie energy, saturated fat, added sugar and sodium.
- Also important to include ”nutrients to encourage” or food ingredients into profile systems, eg whole grains

Examples of nutrient profiling system in SEA countries

Whole Grains in nutrient profiling & front-of-pack labeling

- Some FOP systems in the SEA region have included whole grain as one of the criteria, e.g. Singapore and Malaysia. They are only for certain categories of foods.

Healthier Choice Symbol Singapore

Categories of foods:

- **Cereals** (e.g. whole-grains, flour, instant oats/oatmeal, breakfast cereal, cereal bars, children's cereal, pasta, noodles, rice-based noodles, buns, cakes and pastries)
- **Convenience meals** (e.g. sandwiches, rolls, ready-to-eat rice-based/noodle/pasta-based meals)
- **Snacks** (e.g. savoury biscuits and crackers)
- **Beverages** (e.g. cereal mix)

% of whole grain required varies across sub-categories of food

Healthier Choice Logo Malaysia

Categories of foods:

- **Oatmeal (100% WG)**
- **Breakfast cereal (≥ 25% WG)**

Consumer understanding and use of whole grain

- There are limited consumer-centred studies in SEA region aimed at understanding people's beliefs and attitudes towards whole grains.
- Better understanding of the consumer base in the region is important:
  - benefit public health messaging on increasing intake of whole grains
  - help in the development of innovative wholegrain food products

http://scidoc.org/ijfs.php

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OPEN ACCESS

International Journal of Food Science, Nutrition and Dietetics (IJFS)

ISSN 2326-3350

Assessment of Knowledge, Attitude and Practice Towards Whole Grains Among Children Aged 10 and 11 Years In Kuala Lumpur, Malaysia

Research Article

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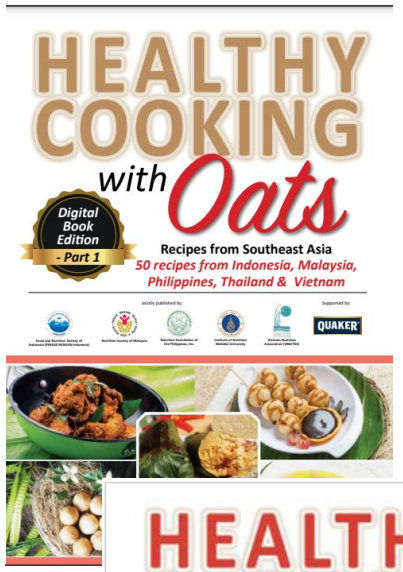
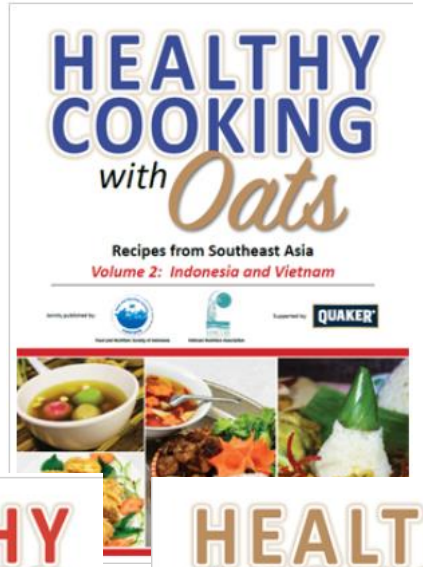
There was initiative in evaluating knowledge, attitude and practices towards whole grains among children aged 10 and 11 years in Kuala Lumpur, Malaysia. The findings indicated that children supplied with knowledge may eventually develop positive attitude and good practice towards whole grains

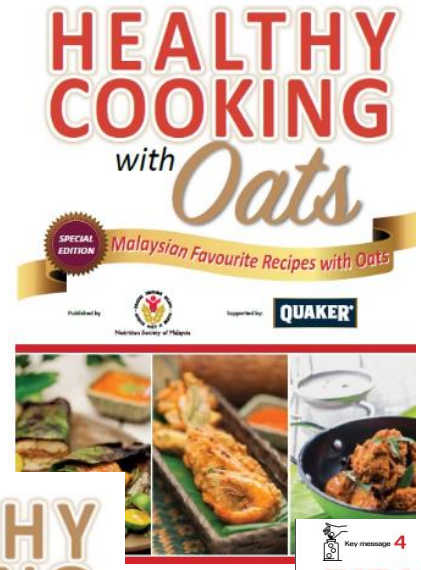
Ways forward

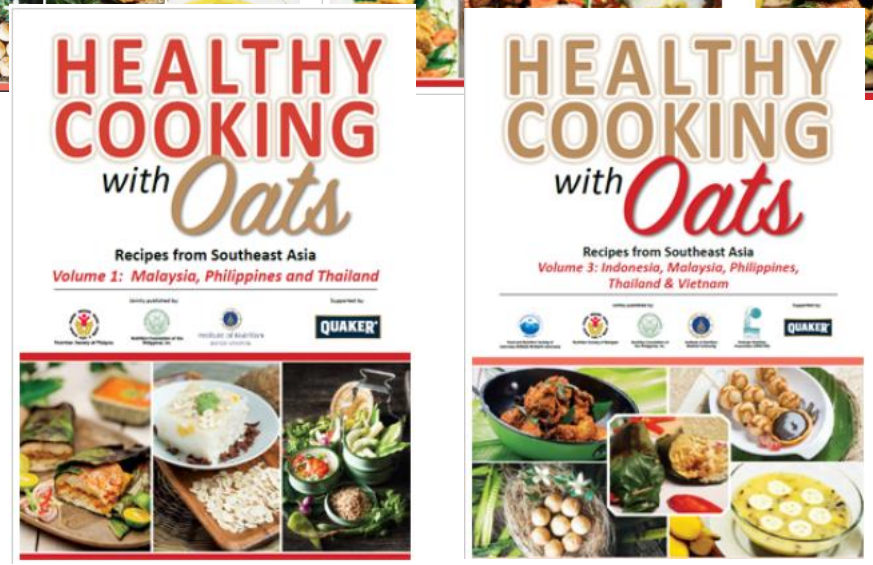
- There is ample scientific support for the health benefits of whole grains. However, consumption of whole grains and foods is still low in many countries.
- Greater recognition of whole grain through public health policy and action is needed.
- Important to enact clear regulation defining whole grains and % of WG required, and labelling requirements
- Variety of consumer education programmes are vital. EG clear and direct message e.g. ‘choose whole grain’ in dietary guidelines is important and in preference to soft language like ‘preferably’.
- Multi-sectoral collaboration among public-private sectors vital to facilitate implementation of interventions and programmes
- More consumer-centred studies are needed to identify solutions to support individuals in making realistic choices that will help them move towards or meet guidelines for daily whole grain intake.

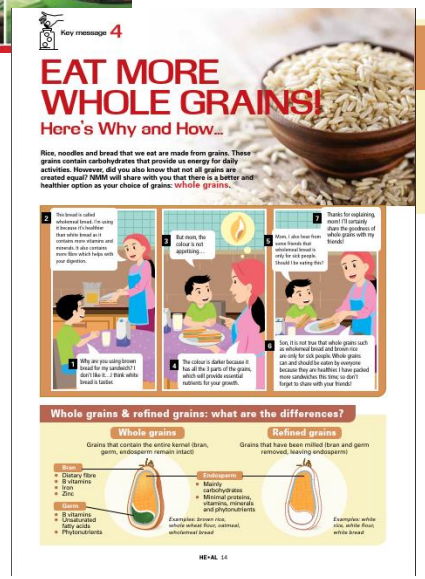
Promotion of whole grains by Nutrition Societies in SEA

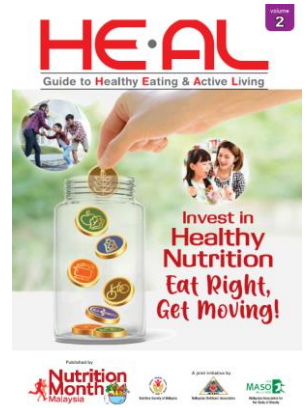












Thank you!

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